

Appl. No. 10/033,258
Amdt. Dated Oct. 7, 2003
Reply to Office Action of July 8, 2003

REMARKS

Claim Rejections Under 35 U.S.C. 112

Examiner rejected claim 14 as being indefinite. Applicants have amended claim 14 to clearly express what is being claimed. Applicants request Examiner reconsider and withdraw the rejection.

Claim Rejections Under 35 U.S.C. 102(e)

Claims 39 and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang.

In response to this rejection, applicants have amended independent claim 39, adding more limitations which define over the prior art cited by Examiner. Accordingly, claim 39 should now be allowable. Applicant traverses the rejection as to claim 40, for reasons set out below.

Regarding amended claim 39, an optical switch comprises an input device, first and second output devices, a primary reflection device and a secondary reflection device. The primary reflection device can be located two positions and controls the optical switch. **The input device and the first output device are aligned with each other.** Examiner states Zhang discloses all the elements of the optical switch of the present invention. However, in all the embodiments of Zhang, **the input device and the corresponding output device are not aligned with each other.** Therefore, the optical switch of the instant invention defined by claim 39 has a structure significantly **different** from that of the optical switch of Zhang.

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In summary, claim 39 is novel and different from Zhang. Therefore, it should be in a condition for allowance.

Regarding claim 40, an optical switch comprises a first and second optic inputs and first and second optic outputs. The first optic input and output align to form a first optic path. The second optic input and output align to form a second optic path. A first and auxiliary reflective surfaces are not at an intersection point of the first and second optic paths. Light from the first optic input can be reflected twice by the first and auxiliary reflective surfaces to the second optic path. **A second reflective surface is at the intersection point.** Light from the second optic input can be reflected by the second reflective surface and directly transmitted to the first optic output. However, Zhang discloses an optical switch having a mirror inserted into an intersection region. Although the specification of Zhang does not describe the position of the two reflective surfaces of the mirror, one skilled in the art can readily apply well-known optical principles and infer that *the two reflective surfaces of the mirror are not at an intersection point of the two optic paths.* Therefore, the optical switch of the instant invention defined by claim 40 has a structure significantly **different** from that of the optical switch of Zhang.

In summary, claim 40 is novel and different from Zhang. Therefore, it should be in a condition for allowance.

Claim Rejections Under 35 U.S.C. 103(a)

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Claims 1-3, 9, 12 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Guinard.

In response to this rejection, Applicant has cancelled claims 1-3, 9 and 12 and amended claim 38. Claim 38 now has more limitations added therein, which patentably define the invention over the prior art cited by Examiner. Accordingly, claim 38 should now be allowable.

Regarding amended claim 38, the first input device and the first output device are **aligned** in a first direction, and the second input device and the second output device are **aligned** in a second direction. When the movable reflection device is at the non-engaged position, input light from the first and second input devices are respectively **wholly** directed to the first and second output devices. Zhang discloses an optical switch with a first input and output devices and a second input and output devices. The first input device and the first output device are **NOT aligned** each other, and **an offset is defined between a central axis of the first input device and a central axis of the first output device**. The second input and output devices have the same kind of structure. The offsets solve the problem of the prior art described in Zhang. That is, when the optical switch is at the first position, light from the first and second input devices are respectively **partially** directed to the first and second output devices, and when the optical switch is at the second position, light from the first and second input devices are respectively reflected and wholly directed to the first and second output devices. Guinard only discloses a case for supporting optical elements, and does not overcome the prior art shortcomings described in Zhang. Zhang and Guinard are directed to solving different problems from each other. There is no hint or suggestion in either of the

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cited references that they could be combined to arrive at the solution provided by the instant invention. Accordingly, claim 38 should now be allowable.

Claims 4-8, 10, 11 and 13-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Guinard and further in view of Sparks et al.

In response to this rejection, applicants have cancelled claims 4-8, 10 and 11, amended claims 13-14 and 16-17, cancelled claim 15, and amended claim 23. Claims 13, 16-17 and 23 now have more limitations added therein, which patentably define the invention over the prior art cited by Examiner. Claims 14, 18-22 and 24-37 depend directly or indirectly from respective of said amended claims. Accordingly, claims 13-37 should now be allowable.

Regarding amended claim 13, an optical switch has a first and second optic input devices, a first and second optic output devices, a movable reflection device, a fixed reflection device and a casing. When the movable reflection device is at a first position, light from the first input device is directed to the first output device, and light from the second input device is directed to the second output device. When the movable reflection device is at a second position, **light from the first input device is reflected by a first movable reflective surface of the movable reflection device and the fixed reflective surface of the fixed reflection device to the second output device, and light from the second input device is reflected by a second moveable reflective surface of the movable reflection device and directed to the first output device. That is, one input light is reflected once to the corresponding output device, and the other output light is reflected three times to the corresponding output device.**

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However, the optical switch disclosed in FIG. 2 of Zhang has a movable reflection device with two reflection surfaces. Light from the input ports are respectively reflected by a reflection surface into the output ports. *Each input light beam is reflected once.* The optical switch disclosed in FIG. 5 of Zhang has a primary mirror and two auxiliary mirrors. *Light from two input ports is respectively reflected three times by the primary mirror and an auxiliary mirror.* No motivation exists, aside from applicants' own disclosure, to configure one input light to be reflected once and the other input light to be reflected three times. Guinard discloses a casing. Sparks only discloses an optical switch with a fixed reflection device. Both Guinard and Sparks fail to overcome the prior art shortcomings described in Zhang. Therefore, one skilled in the art could not have been led to combine the cited references to arrive at the solution provided by the instant invention. Accordingly, claim 13 should now be allowable.

Claim 14 depends from claim 13, and therefore claim 14 should also now be allowable.

Claim 16 depends from claim 14, therefore claim 16 should also now be allowable. Furthermore, claim 16 now defines the first optical input and output devices **coaxially arranged**, and the second optical input and output devices **coaxially arranged**. Contrast this with Zhang, in which the first input and output devices are not coaxial, and the second input and output devices are not coaxial. When the first input light is transmitted to the first output device, loss of light occurs. A similar phenomenon exists with regard to the second input light. The optical switch of Zhang provides the offset in order to solve the problems of the prior art described therein. Both Guinard and Sparks fail to overcome the prior art

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shortcomings described in Zhang. Applicants assert that it would not have been obvious to one skilled in the art to combine the cited references to arrive at the solution provided by the instant invention as recited in claim 16.

Claim 17 depends from claim 16, therefore claim 17 should also now be allowable. Furthermore, the reflective surfaces of the mirror of the optical switch of Zhang are NOT located at a coinciding point of the first and second directions. Both Guinard and Sparks fail to overcome the prior art shortcomings described in Zhang. Applicant asserts that it would not been obvious to one skilled in the art to combine the cited references to arrive at the solution provided by the instant invention as recited in claim 17.

Claims 18-22 directly or indirectly depend from claim 13, therefore claims 18-22 should also now be allowable.

Regarding amended claim 23, similar considerations to those asserted above in relation to claims 13 and 16-17 apply. As argued above, no motivation exists, aside from applicants' own disclosure, to combine the cited references to arrive at the solution provided by the instant invention. Therefore, claim 23 should now be allowable.

Claims 24-37 directly or indirectly depend from claim 23, therefore claims 24-37 should also now be allowable.

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Furthermore, Examiner states the securing member and strain relief defined in claims 27-30 are common in the art and would have been obvious to use for one skilled in the art. Applicants disagree at this point. Applicants agree that the securing member is common in the art and secures the input/output device to the casing. However, applicants argue the strain relief is **NOT** common in the art and **NOT** obvious used by one skilled in the art. It is well know for one skilled in the art that optical fibers are very fragile and often protected by capillary. It is unobvious for one skilled in the art to apply a supererogatory strain relief in the input/output device to prevent the optical fiber and capillary from damaging. Therefore, applicants request Examiner reconsider and withdraw the rejection.

In view of the above claim amendments and remarks, the subject application is believed to be in a condition for allowance and an action to such effect is earnestly solicited.

Respectfully submitted,
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